

Continental Drift Activity

Instructions:

You will be piecing together a puzzle of the supercontinent Pangaea based on fossil and rock evidence on the present-day continents.

- Color the legend on the puzzle pieces handout according to the key.
 - Use those same colors to color each type of fossil or mountain belt according to your legend.
 - Label the continents.
- Use scissors to cut along the borders of the continents. These are the approximate shapes of the continents after Pangaea broke up.
- Place the continents on a piece of construction paper. Move them around using the fossil and mountain chain evidence to match the continents together in the position they were in when they were part of Pangaea. The pieces may not fit together exactly!
- When you have assembled Pangaea based on the fossil and rock locations, glue the continents on to your construction paper in the shape of the supercontinent. Glue the legend to your puzzle. **Check with your teacher BEFORE you glue!**

Answer the following questions on a separate sheet of paper, two-column style.

- Where do you find mountains that are similar to the Appalachians in the eastern United States?
- Which two continents have the most obvious fit of the coastlines?
- How were the fossil symbols and mountain belts helpful in deciding where to move the continents?
- Why don't the present shapes of the continents fit perfectly together?
- Which fossil occurs on the most landmasses?
- Glossopteris* is an extinct fern plant that had leaves like ferns today. **Where are fossils of *Glossopteris* found today?**
- Mesosaurus* is an extinct freshwater reptile that lived millions of years ago. **Where are fossils of *Mesosaurus* found today?**

Evidence or Not?

On the Analyzing Evidence worksheet, read the statement in each box and check whether the statement is evidence or not in the left columns, and whether it supports the movements of the continents in the right columns.



Key to Wegener's Puzzling Evidence - Fossils



By about 300 million years ago, a unique community of plants had evolved known as the European flora. Fossils of these plants are found in Europe and other areas. Color the areas with these fossils **YELLOW**.



Fossils of the fern *Glossopteris* have been found in several locations. Color the areas with these fossils **GREEN**.



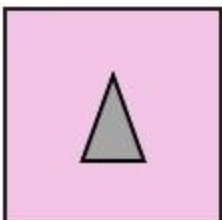
Fossil remains of the half meter-long freshwater reptile *Mesosaurus*. *Mesosaurus* flourished in the early Mesozoic Era, about 240 million years ago. *Mesosaurus* had limbs for swimming, but could also walk on land. Other fossil evidence found in rocks along with *Mesosaurus* suggests that they lived in lakes and coastal bays or estuaries. Color the areas with these fossils **BLUE**.



Fossil remains of *Cynognathus*, a land reptile approximately 3 meters long that lived during the Early Mesozoic Era, about 230 million years ago. It was a weak swimmer. Color the areas with these fossils **ORANGE**.



Fossil evidence of the Early Mesozoic, land-dwelling reptile *Lystrosaurus*. They reproduced by laying eggs on land. In addition, their anatomy suggests that these animals were probably very poor swimmers. Color the areas with these fossils **GRAY**.



The Appalachian Mountains of the eastern United States and Canada are similar to mountain ranges in eastern Greenland, western Europe, and Africa. Color areas with these formations **BROWN**.

Fossil and Mountain Chain Evidence

DIRECTIONS: **1)** Label each continent with its name.

2) Color the fossils or mountains in the legend

and color the symbols on each

continent in the colors of the

legend. **3)** Cut out the continents

and match up the fossil and

mountain evidence to

recreate Pangea. **4)** Glue

the continents into

place on your

construction

paper.



Modified From:

U.S. Department of the Interior
U.S. Geological Survey

This Dynamic Planet; A Teaching Companion
Wegener's Puzzling Continental Drift Evidence

U.S. Geological Survey, 2008

For updates see <<http://volcanoes.usgs.gov/about/edu/dynamicplanet>>

Analyzing Evidence: Continental Drift

Is it evidence?		Statements	Does it support the idea that the continents have moved?	
Yes	No		Yes	No
		1. 1858: Geologist Eduard Seuss points out that fossils of the <i>Glossopteris</i> plant are found in southern Africa, South America, Australia, Antarctica, and India.		
		2. Wegener examines the location of tiny rocks and the direction of grooves formed by large glaciers scraping across southern areas of Africa, South America, Australia, Antarctica, and India. He concludes that if all these places were fitted together, they would form a continuous ice sheet expanding outward in all directions.		
		3. Frankfurt News, January 6, 1912: Announcement that German scientist Alfred Wegener will speak at the Geological Association meeting.		
		4. Popular Geology magazine, March 12, 1912: "Continents are so large they must always have been where they are."		
		5. Wegener observes that a South American mountain range in Argentina matches up with an ancient African mountain range in South Africa when the two continents are placed together. He writes: "It is just as if we were to refit the torn pieces of a newspaper by matching their edges and then check whether the lines of print ran smoothly across. If they do, there is nothing left but to conclude that the pieces were in fact joined in this way."		
		6. 1927: Geologist Alexander du Toit observes rock layers on the western coast of Africa in the following sequence: basalt rock, shale containing fossil reptiles, coal layers containing <i>Glossopteris</i> fossils, rocks containing <i>Mesosaurus</i> fossils, and shale. He discovers an almost identical sequence of rock layers on the eastern coast of South America.		
		7. 1944: Geologist Baily Willis calls Wegener's theory a fairy tale. He argues that the theory should be ignored.		
		8. 1965: Geologist Edward Bullard uses computers to match coasts of South America and Africa. They match extremely well at an ocean depth of 1,000 meters.		
		9. 1980s: Satellites and lasers are used to measure the movement of continents. They continue to move at an average of about 2 cm (0.8 in) per year.		
		10. Fossils of <i>Megascolecina</i> earthworms are found in South America, Africa, India, and Australia, as well as the islands of Madagascar and New Guinea.		